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National University Corporation Osaka University
Chugai Pharmaceutical Co., Ltd.

Comprehensive Collaboration Agreement between Osaka University and Chugai ~Total of 10 billion yen contribution over 10 years to IFReC~

❖ Outline

Osaka University and Chugai Pharmaceutical Co., Ltd. (TOKYO:4519) today announced the conclusion of a comprehensive collaboration agreement for advanced research in immunology between the Osaka University Immunology Frontier Research Center (IFReC) and Chugai.

IFReC was selected for the World Premier International Research Center (WPI) Initiative Program initiated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2007 and launched at Osaka University in October 2007. Headed by Director Shizuo Akira, an eminent immunologist, IFReC convenes approximately 30 of the world's top-class principal investigators from Japan and overseas in the fields of immunology, live imaging and bioinformatics to conduct innovative immunological research. In March 2011, a new research building was completed on Osaka University's Suita Campus providing superior research facilities and an international environment in which to focus on research. The research conducted by IFReC is of the highest standard and recognized globally, with papers published in major international journals and prestigious international prizes awarded to its researchers.

Chugai is a leader in the field of biopharmaceuticals and antibody pharmaceuticals in Japan. In 2005 the company succeeded in developing the first domestically-created antibody drug, Actemra. Currently, Chugai is developing ACE910 (emicizumab) and CIM331 (nemolizumab) using its proprietary antibody engineering technologies. Going forward, Chugai aims to utilize middle molecule technologies, which are expected to become another central technology for the development of new drugs, to focus on the research and development of first-in-class and best-in-class pharmaceuticals.

This comprehensive collaboration will maintain an academic environment that allows researchers at IFReC to focus on basic research originating from their own ideas, with the aim of contributing back to society the results of the advanced immunology research. In addition, through the combination of the global top-class research in immunology at IFReC and the knowledge of innovative drug research accumulated by Chugai through its proprietary technologies, the obstacles between basic research and clinical application research will be eliminated. It is

expected that this will lead to the unprecedented discovery of innovative novel drugs in the field of immunology.

Chugai will, according to the agreement, provide one billion yen per year for a period of 10 years in return for access to information on results relating to independent basic research projects at IFReC¹⁾ and the right of first refusal for joint research. In addition, a Collaboration Promotion Laboratory will be set up at IFReC to implement collaboration research toward clinical application.

IFReC and Chugai aim to have five to ten joint research projects in progress constantly. The collaboration of two organizations at the top-level of research and technology in the world will seek to achieve significant results that contribute to the benefit of the medical community and human health around the world.

【Outline of the comprehensive collaboration agreement】

Period: April 2017 to March 2027

Investment: 1 billion yen per year

Purpose: To benefit the society through further advancement of the basic immunology research at IFReC as well as contributing to society through the creation of innovative novel drugs by utilizing the immunology research capabilities at IFReC in the research and development of innovative pharmaceuticals at Chugai.

Research area: Immune-associated diseases

【Collaboration scheme】

1. IFReC researchers will continue academic basic research without restriction.
2. Research outcomes of independent research projects¹⁾ that IFReC is engaged in will be regularly disclosed (reported) to Chugai twice per year.
3. Chugai will select research projects²⁾ for joint research on the basis of the reports.
4. IFReC researchers will engage in joint research with Chugai.
5. In and after the final stages of non-clinical research, Chugai may engage in research development independently.

【Footnotes】

1) Excluding research projects already under contract with a third party.

2) The number of joint research projects to be engaged in will be decided through discussions between IFReC and Chugai.

❖ **Comment from Osaka University President Shojiro Nishio**

Osaka University promotes collaboration with industry based on the concept “**From university-industry cooperation to university-industry creation (co-creation)**” and aims for innovation toward creation of social value. Chugai has its own drug design development technology and global network and is a leader in the field of biopharmaceuticals and antibody pharmaceuticals in Japan. The conclusion of a comprehensive collaborative agreement with Chugai is expected to enhance realization of the innovation the university is aiming for. **This collaboration is a new**

form of university-industry cooperation at Osaka University. The funding for research activities at the basic research stage will promote basic research for the long-term and strengthen university-industry cooperation. The success of this collaboration will be an important foundation for university-industry co-creation at the university and the scheme is expected to be applied widely.

❖ **Comment from IFRcC Director Shizuo Akira**

Since its launch in 2007, IFRcC has been conducting research toward comprehensive understanding of the immune system and has achieved internationally-acclaimed exceptional results in the field of basic immunology. For researchers to continue to advance research based on their own ideas and in order to advance applied research, we aim to evolve into a research center that is engaged in medical and clinical immunology. **This collaboration will cement IFRcC's research foundation and maintain IFRcC's level even beyond the end of the support period for the WPI program in April 2017, thereby facilitating our achievement and continuance of the four WPI objectives (advancing leading-edge research, creating interdisciplinary domains, establishing international research environments and reforming research institutions).**

❖ **Comment from Chugai, Chairman & CEO Osamu Nagayama**

In recent years, in conjunction with advances in science and technology, academic research capabilities are evolving to elucidate in greater detail the mechanisms of the onset of disease at the molecular level. The pharmaceutical industry is expected to contribute to improving the quality of medicine by creating innovative pharmaceuticals and at the same time lead Japan's economy as a high added-value industry. Drug discovery technology is making immense changes through the use of genome research and biotechnology etc., giving rise to the need for a new style of university-industry cooperation. It is a great honor to have been selected by Osaka University to partner with IFRcC in this comprehensive collaboration. **Chugai has innovative proprietary technologies for antibody engineering and middle molecules, which enables drug discovery of targets that could not be done previously. Through the combination of these technologies and the diverse research results achieved through the global top-class immunology research at IFRcC, we are confident of providing multiple innovative pharmaceuticals to patients.**

❖ **Other**

About Osaka University

Osaka University was established in 1931 at Nakanoshima, Osaka as the sixth imperial university and comprised the School of Medicine and the School of Science. In 2007 the university merged with the Osaka University of Foreign Studies (established in 1921). The university currently has 11 schools, 16 graduate schools and five affiliated research institutes making it a leading research-oriented comprehensive university in Japan.

Inheriting its ideology and spirit from its origins in Kaitokudo and Tekijuku, Osaka University is resolved to contribute to the stability and welfare of society, worldwide peace, and harmony between people and the natural environment. Through the orchestration and co-creation of diverse

knowledge, the university pursues the essence of scholarship at the highest level of education and research. The university aims to solve global-scale social problems through the creation of new academic fields and integrated learning exceeding specialist fields to develop graduates who are capable of making significant contributions to the creation of a society rich in humanity. The solid implementation of these aims will lead to our goal of becoming one of the world's best universities. As of May 1, 2015, there were 15,535 undergraduate students across Suita, Minoh and Toyonaka campuses, and 7,886 graduate students. The staff numbered 6,363.

For further details on Osaka University see the website <http://www.osaka-u.ac.jp/en/index.html>

About the Immunology Frontier Research Center (IFReC)

IFReC was selected for the World Premier International Research Center (WPI) Initiative Program initiated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2007 and launched at Osaka University on October 1, 2007. Led by internationally-renowned immunologist Shizuo Akira, the center is a world top-class research institution. The discoverer of regulatory T cells, Professor Shimon Sakaguchi, and 180 other high-level researchers are leading the world of immunology at IFReC. IFReC's goal is to visualize the behavior, activation status, and interaction of immune cells in vivo through the fusion of immunology, imaging technology and bioinformatics, to understand the immune system comprehensively.

For further details on IFReC see the website <http://www.ifrec.osaka-u.ac.jp/en/index.htm>

About Chugai

Chugai Pharmaceutical is one of Japan's leading research-based pharmaceutical companies with strengths in biotechnology products. Chugai, based in Tokyo, specializes in prescription pharmaceuticals and is listed on the 1st section of the Tokyo Stock Exchange. As an important member of the Roche Group, Chugai is actively involved in R&D activities in Japan and abroad. Specifically, Chugai is working to develop innovative products which may satisfy unmet medical needs, mainly focusing on the oncology area.

In Japan, Chugai's research facilities in Gotemba and Kamakura are collaborating to develop new pharmaceuticals, and laboratories in Ukima are conducting research for technology development for industrial production. Overseas, Chugai Pharmabody Research based in Singapore is engaged in research focusing on the generation of novel antibody drugs by utilizing Chugai's proprietary innovative antibody engineering technologies. Chugai Pharma USA and Chugai Pharma Europe are engaged in clinical development activities in the United States and Europe.

The consolidated revenue in 2015 of Chugai totalled 498.8 billion yen and the operating income was 90.7 billion yen (IFRS Core basis).

Additional information is available on the internet at <http://www.chugai-pharm.co.jp/english>.

About the World Premier International Research Center (WPI) Initiative Program

The World Premier International Research Center (WPI) Initiative was launched in 2007 by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). In the middle of intensifying competition for securing the world's finest brains, Japan is facing the increasing needs to lead the world with its competitive edge in science and technology. In this environment, the WPI

program aims to build within Japan “globally visible” research centers that boast a very high research standard and outstanding research environment, sufficiently attractive to prompt frontline researchers from around the world. Nine WPI centers have been established, all of which engage in research activities under strong leadership by center directors to realize four WPI objectives of advancing leading-edge research, creating interdisciplinary domains, establishing international research environments and reforming research institutions.

For further details on WPI see the website

http://www.mext.go.jp/english/research_promotion/1303822.htm

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